SRS Citizen's Advisory Board

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## Old Radioactive Waste Burial Ground

### Meeting Summary

June 2, 1999
Aiken Federal Building
Aiken, SC

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The Citizens Advisory Board (CAB) Environmental Remediation and Waste Management (ER&WM) Subcommittee Old Radioactive Waste Burial Ground (ORWBG) Focus Group met on Wednesday, June 2, 1999, 1:00 p.m., at the Aiken Federal Building, Aiken, S.C. The purpose of the meeting was to hear presentations on dilution flows in Four-mile Branch, intruder analysis used in the Corrective Measures Study/Feasibility Study (CMS/FS) for the ORWBG on groundwater quality (beyond 100 years), Composite Analysis methodology, results and applicability to the ORWBG Focus Group, the ORWBG Focus Group approach for groundwater transport analysis and consequence to man and the path forward. Those in attendance were:

| CAB Members | Stakeholders | DOE/Contractors |
|---|---|---|
| Karen Patterson, Admin. Lead | Lee Poe, Tech. Lead | Rod Romando, DOE |
| | Todd Crawford | Jim Cook, WSRC |
| | Bill McDonell | Tom Rehder, WSRC |
| | Michael Moore, DHEC | Dave Amick, SAIC |
| | | John Bennett, BSRI |
| | | Kevin Brewer, BSRI |
| | | Mike Griffith, WSRC |
| | | Ed McNamee, BSRI |
| | | Don Toddings, BSRI |
| | | Sonny Goldston, BNFL |
| | | Tim Jannik, WSRC |
| | | Elmer Wilhite, WSRC |
| | | Jim Moore, WSRC |

Karen Patterson, Administrative Lead, welcomed those in attendance and reviewed the agenda. She asked Lee Poe, Technical Lead, to begin his presentation. Mr. Poe reviewed the background and Four-mile Branch Water Flow Data. The stream flow data was for 1996, 1997 and 1998 from 5 points on Four-mile Branch.

Dave Amick, SAIC, introduced Jim Mayberry, a certified health physicist, to review the key features of

the intruder analysis used in the CMS/FS.

Mr. Mayberry stated the objective was to identify which radiological hot spots, if any require intruder protection and assess how general cap components affect intruder impacts. The procedure was based on the Nuclear Regulatory Commission (NRC) methods developed for 10 CFR Part 61 rulemaking. Mr. Poe asked if this process had ever been used for licensing a low-level waste facility? Mr. Mayberry said that an application had been submitted, but no license has been awarded at this time. Mr. Mayberry explained the four scenarios and the mathematical models used as well as the assumptions.

The results and conclusions from the intruder analysis were as follows:

- 100-year hot spots, in general, do not need intruder barriers.
- Those hot spots that do need barriers contain Cs-137 and Sr-90 and will not need a barrier after 160 to 280 years.
- Some hot spots need to preclude intrusion for a very long time.
    - Hot spots with Pu-239
    - C-14 in deionizers

T wo issues were discussed on the type of cap used:

- Ed McNamee stated that due to the input of the Focus Group, the type of intruder barrier has been reconsidered. It would possibly be a granite slab.
- In the cost estimates, only one concrete slab was included but the time was 10,000 years. It would take many concrete slabs over that period of time and there may not be anyone to make sure the slab is replaced when needed. Therefore, the costs were extremely low and the concrete slab alternative was not a good alternative.

K evin Brewer,BSRI, presented an overview of the CMS/FS groundwater modeling with an emphasis on assumptions and impacts. He stated there was three main components of the model; source element leaching, vadose zone flow, and saturated zone flow. The burial ground was divided into approximately 60 different zones called source elements.

The alternatives considered were:

- Base Case (Native Cover with 100-year control)
- Native Cover with Bio-Barrier
- RCRA Synthetic Cap (30-year life)
- RCRA Clay Cap with 100-year control
- RCRA Clay Cap with bio-barrier

T he results gave areas of maximum seep-line concentrations. Examples pointed out were Tritium, Carbon-14 and Cadmium as follows:

- Greatest concentration contributor (Basecase)
- Total flux (Basecase)
- Total concentration (all alternatives)
- Total flux (all alternatives)

D iscussions resulted in the Focus Group feeling that there was no need for a cap other than for several hot spots.

Elmer Wilhite, WSRC, presented the radiological composite analysis for the general separations area. He discussed the composite analysis methodology, results and potential applicability to the Focus Group. It was stated that the composite analysis methodology is different from the CMS/FS methodology because the regulations pertaining to the two are different.

The results of the composite analysis were as follows:

- Peak compliance dose (1.8 mrem/year at UTR mouth) is less than DOE limit of 100 mrem/year and dose constraint of 30 mrem/year.
- Active waste disposal facilities do not significantly contribute to calculated dose.
- Inactive Shallow Land Disposal units are the major contributors to calculated dose.
- Only a few radionuclides contribute significantly to the calculated dose.
- Peak dose at Fourmile Branch mouth (14 mrem/year) is less than DOE limit of 100 mrem/year and dose constraint of 30 mrem/year.
- Dose at Four-mile Branch mouth dominated by releases from the Old Burial Ground.
- Old Burial Ground dose dominated by Tritium (near-term), and Carbon-14 and Neptunium-237 (long-term).

T he potential applicability to the ORWBG Focus Group is as follows:

- Composite analysis results indicate significant pathways and radionuclides
- Composite analysis results for the Old Burial Ground are conservative
    - No closure cap assumed
    - No containment for reactor de-ionizer resins
- Composite analysis results could probably be used to estimate values of interest to the Focus Group

L ee Poe led the Focus Group in a discussion of the approach the Focus Group should take to the groundwater transport and consequence to man. He mentioned that the proposal to fund an independent groundwater transport study was tabled at the CAB meeting on May 25. Karen Patterson described the CAB discussions and actions of the CAB at that meeting. Mr. Poe stated that he had invited Julie Corkran, EPA, and Keith Collinsworth, DHEC, to attend the ORWBG Focus Group meeting and speak to the issue. Ms. Corkran called and expressed regrets she could not make the meeting but sent an e-mail for Mr. Poe to summarize to the group for her.

After considerable discussion, Ms. Patterson recommended that a White Paper be written and sent to the CAB as a motion and then sent to the regulators. The White Paper would state the Focus Group's conclusions with regard to the ORWBG and associated groundwater. In order to have input before the regulators issue the permit in September, it was suggested that the recommendation be available for the July CAB meeting. Ed McNamee suggested that the Focus Group or a small group of the members might request a meeting with the regulators before the permit is issued sometime in September to discuss their comments and recommendations. Todd Crawford will draft the main points of the White Paper with Karen Patterson helping to write the draft.

It was determined that the next meeting will be called by Karen Patterson once the draft of the White Paper is completed. Members of the Focus Group will be contacted for time and location of the next meeting. Ms. Patterson adjourned the meeting.

***Meeting handouts may be obtained by calling 1-800-249-8155.***